CURE

Citizens United for Research in Epilepsy

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"My son has been severe seizures for life. Everyday I ho hope will be a cure treatments for epil

Donna Williams
Mother of child with e

2001 Grant Recipients

CURE is proud to announce the funding of six research awards for the year 2001. CURE Grant Recipients have been selected with the help of CURE's Scientific Advisory Board, comprised of prominent members of the medical community.

The following describes the six projects underway:

"Early Detection and Minimal Perturbation for Seizure Control"
Peter L. Carlen, MD, FRCP *Toronto Western Research Institute Toronto, Ontario, Canada*

The aim of this research is to lay the foundation for a 'smart' device which can learn a patient's seizure signature, predict the onset of a seizure, and deliver the minimum perturbation to prohibit its development. The hypothesis being tested is that seizure prevention and control is possible by:

- Computer-aided electronic early seizure detection
- Correct placement of perturbation electrodes in or beside the seizure focus
- Appropriate timing and minimal stimuli for perturbation

This innovative approach may result in an extremely helpful treatment and will certainly add to our basic understandings and, eventually, even a cure.

"Developing a Cure for Lafora's Progressive Myoclonus Epilepsy"
Antonio V. Delgado-Escueta, MD *UCLA & Greater Los Angeles VA Medical Center Los Angeles, California*

Lafora's Progressive Myoclonus Epilepsy is invariably fatal, with 80% of patients dying by the age of 18. The abnormal gene for Lafora's has been discovered, and the challenge in this proposal is to deliver the normal gene across the blood-brain-barrier. The lessons learned in the gene therapy of this specific epilepsy can be applied in the

future to the more common epilepsies. While gene therapy for epilepsy has been discussed for over a decade, application of this promising treatment approach has been limited by the lack of practical methods for gene delivery into the brain.

"Glial Function in a Chronic Model of Epileptic Excitability"
Adriana Emmi, MD, PhD *University of Washington Seattle, Washington*

The goal of this proposal is to further investigate the role of hippocampal glial cells (astrocytes) in the control of neuronal excitability, with specific emphasis on the contribution of ERG-like channels in the generation and/or maintenance of epileptiform activity and seizure-related neuropathologic damage. It is possible that an inherited deficit in glia ERG function is associated with some forms of epilepsy. This proposal has the potential to lead to unique approaches to more specific and focused therapeutic interventions.

"Intraoperative Optical Mapping of Human Neocortical Epilepsy in the Treatment of Partial Onset Seizures"
Theodore H. Schwartz, MD *Weill Medical College of Cornell*

Critical to the success of epilepsy surgery is the ability to rapidly and accurately identify the topographical limits of the epileptic focus. To date, electrical recordings have been the gold standard by which the mapping of the focus has been done. In this proposal, an alternative technique will be studied--optical recording of changes in reflectance of light associated with neuronal activity. Preliminary data show that optical epilepsy maps may be more accurate than electrical maps in determining the boundaries of the epileptic focus. The ultimate goal is to determine whether surgical resections based on optical epilepsy maps can improve surgical results thereby eliminating seizures, medications and side effects in a greater number of appropriately selected patients.

"Focal Cooling as a Therapy for Neocortical Epilepsy"
Steven M. Rothman, MD *Washington University School of Medicine St. Louis, Missouri*

the Inventor

The aim of this proposal is investigate the potential of focal cooling, using small thermoelectric (Peltier) devices to rapidly terminate seizure discharges. The answers found in this research may help to reduce risk and increase effectiveness of epilepsy surgery. In addition, the permanent implantation of a small device coupled with an EEG sensor to anticipate seizure onset and suppress activity prior to the generation of a clinical seizure, could become a viable and preferable alternative to epilepsy surgery.

"Anticonvulsant Effects of Substantia Nigra Stimulation"

Libor Velisek, MD, PhD *Albert Einstein College of Medicine Bronx, New York*

This is the second year of Dr. Velisek's project which aims to determine the effects of substantia nigra stimulation on seizures in adult rats with chronic epilepsy and in infant rats with repeated seizures. In addition, this research will attempt to determine behavioral and cognitive outcome after long-term stimulation in the adult and the developing brain. Electrical stimulation has been successfully used for pharmaco-resistant Parkinson's disease with improved cognitive and executive functions. It is hoped that similar results may be found for epilepsy.

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